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HIGH FREQUENCY COMMUNICATIONS FACILITIES NEAR SOVIET AIRFIELDS

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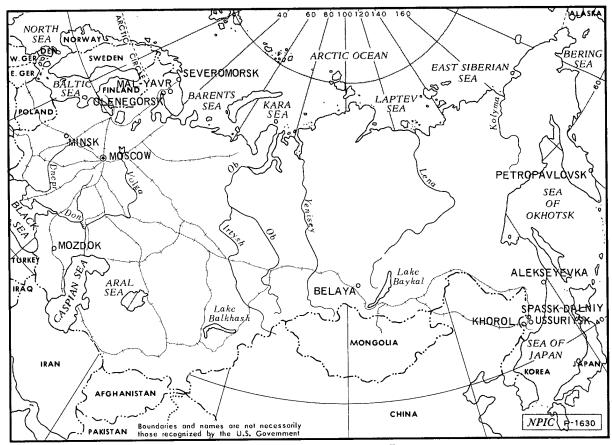
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HIGH FREQUENCY COMMUNICATIONS FACILITIES NEAR SOVIET AIRFIELDS

ABSTRACT

- 1. This report is an imagery-derived analysis of 21 high frequency (HF) communications facilities in the USSR. All of these facilities are within 5 nautical miles (nm) of airfields. This report will serve as the initial compilation of data on HF communications facilities near Soviet airfields. Any additional sites that may be identified will be reported in supplements to this report.
- 2. A location map and descriptions of each of the 21 communications facilities are provided in this report. Each description is accompanied by an annotated photograph and a table presenting the types, Soviet designators, frequencies in megahertz, and orientations of the HF antennas. The types of HF antennas described include single and double rhombic, fishbone, horizontal dipole, and quadrant (vee) antennas.



FTGURE 1. LOCATION MAP

- 1 -

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INTRODUCTION

3. Twenty-one Soviet communications facilities containing confirmed high frequency (HF) antennas are described in this report. The facilities are associated with 11 Soviet airfields at locations shown on the map, Figure 1. This report will serve as the initial compilation of data on this subject. When adequate coverage of additional sites is obtained

they will be reported in individual supplements to this report. It is intended that a systems analysis of such installations will be conducted once a sufficient data base is established.	
4. Each description of a facility provided in this report is accompanied by an annotated photograph and a table on the antennas observed at the site. Information provided in each table includes types of antennas, Soviet designators, frequency in megahertz (MHz), and orientation in degrees. The report as a whole is based on information derived from photography obtained during the period beginning in March 1968 to early February 1971	225X1
5. Seven of the 21 facilities are within 5 nm of five Soviet Long Range Air Army airfields; 11 are within 5 nm of five Naval Aviation airfields, and three are within approximately 5 nm of a seaplane station. The 11 air installations are:	
Long Range Air Army Airfields	
Belaya Airfield Minsk/Machulishche Airfield Mozdok Airfield Spassk-Dalniy East Airfield Ussuriysk/Vozdvizhenka Airfield	25X1 25X1 25X1 25X1 25X1
Naval Aviation Airfields Alekseyevka Airfield Khorol East Airfield Malyavr Airfield (BE Olenegorsk Airfield Severomorsk Airfield	25X1
Petropavlovsk/Ozero Khalakhtyrka Seaplane Station	25X1

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6. Some of the communications facilities described in this report could possibly be related; however, this report describes only a small, random sampling of the high frequency communications facilities in the USSR, and no attempt is made to determine probable correspondents or networks. One fishbone antenna and one single rhombic antenna near Severomorsk Airfield are oriented in the general direction of Moscow, and five single rhombic antennas and one fishbone antenna near Severomorsk Airfield are oriented in the general direction of Leningrad. Four single rhombic antennas near Olenegorsk Airfield are oriented in the general direction of Moscow, and two single rhombic antennas near Olenegorsk Airfield are oriented in the general direction of Leningrad. One of the fishbone antennas and two of the double rhombic antennas near Petropavlovsk/Ozero Khalakhtyrka Seaplane Station are oriented in the general direction of Vladivostok. The one thing that all of the communications facilities in this report do have in common is that each contains at least one high frequency antenna. Although these facilities fall within 5 nm of the referenced airfields, their functions are not necessarily related to the airfields.

7. Assignment of Soviet designators to HF antennas in this report is based on measurements unique to each type of antenna. These measurements have been published in several documents cited in the references section. 1-4

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8. Each of the following descriptions of the 21 HF communications facilities is listed under the airfield nearest the facility. The airfields are presented in alphabetical sequence, except that Spassk-Dalniy is listed before Severomorsk to permit certain descriptions and their accompanying illustrations to be on facing pages.

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BASIC DESCRIPTION

Alekseyevka Airfield

Alekseyevka Airfield is a Naval Aviation airfield in the Far East Military District. One high frequency (HF) communications facility can be identified within 5 nm of this airfield.

Alekseyevka HF Radio Communications Station, (Figure 2)

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This facility is 1.4 nm east of the center of Alekseyevka Airfield runway at 49-14-00N 140-16-17E. The facility contains seven high frequency antennas.

Antenna Number	Type	Soviet Designator	Frequency (MHz)	Orientation _(Degrees)
1 2 3 4 5 6 7	Horizontal Dipole	VGD 8/h d VGD 8/h d VGD 8/h d VGD 8/h d VGD 8/h d VGD 12/h d	9.38 - 23.45 9.38 - 23.45 9.38 - 23.45 9.38 - 23.45 9.38 - 23.45 9.38 - 23.45 9.19 - 18.00	105/285 135/315 165/345 15/195 45/255 75/255

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Belaya Airfield

Belaya Airfield is a Long Range Air Army airfield in the Transbaikal Military District. Two HF communications facilities can be identified within 5 nm of this airfield.

Site No. 1 - Belaya HF/VHF Radio Communications Station South, (Figure 3)

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This facility is 1.8 nm southwest of the center of Belaya Airfield runway at 52-54-00N 103-31-50E. The facility contains three high frequency antennas and two FORK REST antennas.

Antenna <u>Number</u>	Type	Soviet Designator	Frequency (MHz)	Orientation (Degrees)	Note	
1 2 3	Horizontal Dipole Horizontal Dipole Horizontal Dipole	VGD 30/h d	2.5-6.25		l & 2 form day/night pair	25X1

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Belaya Airfield

Site No. 2 - Belaya HF/VHF Radio Communications Station North (Figure 4)

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This facility is 0.9 nm west of the center of Belaya Airfield runway at 52-55-00N 103-32-45E. The facility contains six high frequency antennas and two FORK REST antennas.

Antenna Number	Type	Soviet Designator	Frequency (MHz)	Orientation (Degrees)	<u>Note</u>
1 2 3 4 5 6	Horizontal Dipole Horizontal Dipole Horizontal Dipole Horizontal Dipole Horizontal Dipole Horizontal Dipole	VGD 25/h d VGD 25/h d VGD 25/h d VGD 25/h d VGD 25/h d VGD 12/h d	3.13-7.82 3.13-7.82 3.13-7.82 3.13-7.82 3.13-7.82 7.19-18.00		5 & 6 form day/night pair

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	ast Airfield			in the Her Heat	
Military	rol East Airfield is District. One HF co this airfield.	a Naval Aviat mmunications	facility can	be identified within	
Khorol E	ast Airfield Radio Co	ommunications	Station,	(Figure 5)	25
Thi	s facility is 1.4 nm	west-southwes	t of the cent	er of the Khorol	
East Air HF anten	field runway at 44-62	2-25N 132-05-4	OE. The faci	lity contains three	
uilding			🗸		
Antenna		Soviet	Frequency	Orientation	
Number_	Type	Designator	(MHz)	(Degrees)	2
1	Horizontal Dipole Horizontal Dipole	VGD 15/28 d VGD 12/23 d	5.0-12.5 7.10-18.0	75/255	2
2 3	Quadrant (poss)	UGD 8/16 d	14.05-23.9	Omnidirectional	
Note: R	andom masts indicate	probable addi	tional arrays	5.	ີ າ
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Malyavr Airfield

Malyavr Airfield is a Naval Aviation airfield in the Northern Air Defense District. A high frequency communications facility is within 5 nm of this airfield.

Mal-Yavr HF Communications Facility,

(Figure 6)

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This facility is 3.8 nm north-northeast of the center of Malyavr Airfield runway at 68-55-20N 033-47-20E. At least 17 high frequency antennas, a microwave antenna, and four FORK REST antennas are identified.

Antenna Number	Тъто	Soviet Designator	Frequency (MHz)	Orientation	
Wanter	<u>Type</u>	Designator		Degrees	
1	Horizontal Dipole	VGD 25/h d	3.13-7.82		25 X 1
2	Horizontal Dipole	VGD 25/h d	3.13-7.82		
3	Horizontal Dipole	VGD 25/h d	3.13-7.82		
4	Horizontal Dipole	VGD 15/h d	5.0-12.5		
5	Horizontal Dipole	VGD 15/h d	5.0-12.5		
6	Quadrant	UGD 32/h d	3.51-5.97	Omnidirectional	
. 7	Horizontal Dipole	VGD 15/h d	5.0-12.5		25X1
8	Horizontal Dipole	VGD 15/h d	5.0-12.5	15/195	
9	Horizontal Dipole	VGD 25/h d	3.13 - 7.82	100/280	
10	Horizontal Dipole	VGD 25.h d	3.13 - 7.82		25 X 1
11	Horizontal Dipole	VGD 20/24 d	3.75-9.38		
12	Horizontal Dipole	VGD 15/h d	5.0-12.5		
13	Single Rhombic	RG 65/Undet	undet	175/355	
14	Shunted Horizontal	VGDsh-2U 16/h d	3.0-9.37		25 X 1
	Dipole				
15	Quadrant	UGD 20/h d	5.62-9.55	Omnidirectional	
16	Horizontal Dipole	VGD 8/h d	14.05-23.9		25X1
17	Horizontal Dipole	VGD 20/h d	3.75-9.38	75/255	

Accuracy statement: Measurements used to assign Soviet designators are only approximate.

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thin 5 nm of this mmunications Sta ility is 1.6 nm veld runway at 53-	. One HF common of the common	munications for shohe, to of the center	(Figure 7)	25X
Type	Soviet Designator	Frequency (MHz)	Orientation (Degrees)	٠
rizontal Dipole rizontal Dipole	VGD 30/h d VGD 12/h d	2.5-6.25 9.19-18.0		25X1
	shche Airfield chulishche Airfielt ilitary District thin 5 nm of this communications State ility is 1.6 nm veld runway at 53- nency antennas. Type rizontal Dipole	chulishche Airfield is a Long ilitary District. One HF communications Station Machuli ility is 1.6 nm west-northwesteld runway at 53-46-44N 027-36 lency antennas. Soviet Type Designator rizontal Dipole VGD 30/h d	shche Airfield chulishche Airfield is a Long Range Air Armilitary District. One HF communications fathin 5 nm of this airfield. communications Station Machulishche, ility is 1.6 nm west-northwest of the centered runway at 53-46-44N 027-32-17E. The fatency antennas. Soviet Frequency Designator (MHz) rizontal Dipole VGD 30/h d 2.5-6.25	chulishche Airfield is a Long Range Air Army airfield in the ilitary District. One HF communications facility can be thin 5 nm of this airfield. Communications Station Machulishche, (Figure 7) Calify is 1.6 nm west-northwest of the center of Minsk/Machueld runway at 53-46-44N 027-32-17E. The facility contains mency antennas. Soviet Frequency Orientation (MHz) (Degrees) Crizontal Dipole VGD 30/h d 2.5-6.25

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Mozdok Airfield

Mozdok Airfield is a Long Range Air Army airfield in the North Caucasus Military District. One HF communications facility can be identified within 5 nm of this airfield.

Mozdok Airfield HF Radio Communications Station NW,

(Figure 8) 25X1

This facility is 1 nm southeast of the center of Mozdok Airfield runway at 43-46-25N 044-37-25E. The facility contains four high frequency antennas.

Antenna	Type	Soviet	Frequency	Orientation
<u>Number</u>		<u>Designator</u>	(MHz)	(Degrees)
1 2 3 4	Quadrant Quadrant Horizontal Dipole Horizontal Dipole	UGD 32/h d UGD 32/h d VGD 12/h d VGD 12/h d	3.51-5.97 3.51-5.97 7.19-18.00 7.19-18.00	Omnidirectional Omnidirectional

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Olenegorsk Airfield

Olenegorsk Airfield is a Naval Aviation airfield in the Leningrad Military District. Five HF communications facilities can be identified within 5 nm of this airfield; however, only four of these five facilities are described in this report. A description of the fifth facility, Olenegorsk Radio Communications and Broadcast Station Transmitter has been published in a previous report, and that description remains current.5

25X1

Site No. 1 - Olenegorsk Airfield HF Radio Communications Station East, (Figure 9)

25X1

This facility is 0.8 nm southeast of the center of Olenegorsk Airfield runway at 68-08-20N 033-39-20E. The facility contains two high frequency antennas.

Antenna <u>Number</u>	Type	Soviet Designator	Frequency (MHz)	Orientation _(Degrees)
1	Quadrant	UGD 32/h d	3.51-5.97	Omnidirectional
2	Quadrant	UGD 32/h d	3.51-5.97	Omnidirectional

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Olenegorsk Airfield

Site No. 2 - Olenegorsk Radio Communications and Troposcatter Station, (Figure 10)

25X1

This facility is 1.1 nm southeast of the center of Olenegorsk Airfield runway at 68-08-05N 033-29-15E. The facility contains three high frequency antennas and two pair of TWIN DISH troposcatter antennas.

Antenna Number	Type	Soviet De si gnator	Frequency (MHz)	Orientation (Degrees)	
1 2 3	Horizontal Dipole Horizontal Dipole Horizontal Dipole	VGD 25/h d VGD 25/h d VGD 25/h d	3.13-7.82 3.13-7.82 3.13-7.82	105/285	

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Olenegorsk Airfield

Site No. 3 - Olenegorsk HF Communications Facility North, (Figure 11)

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This facility is 4.2 nm west-northwest of the center of Olenegorsk Airfield runway at 68-10-20N 033-17-25E. The facility contains 12 high frequency antennas.

Antenna Number	Type	Soviet <u>Designator</u>	Frequency (MHz)	Orientation (Degrees)
1 2 3 4 5 6 7 8 9	Single Rhombic Single Rhombic Single Rhombic Single Rhombic Single Rhombic Single Rhombic Horizontal Dipole Horizontal Dipole	VGD 12/15 d VGD 30/30 d	6.0-12.5 10.26-21.38 10.26-21.38 6.0-12.5 6.0-12.5 10.26-21.38 2.5-6.25 9.19-18.0 2.5-6.25	10/190 10/190 15/195
10 11 12	Horizontal Dipole Quadrant Quadrant	VGD 12/30 d UGD 12/14 d UGD 20/29 d	9.19-18.0 9.35-15.9 5.62-9.55	15/195 Omnidirectional Omnidirectional

Antennas 1 & 2, 3 & 4, 5 & 6,7 & 8, 9 & 10, and 11 & 12 form day/night pairs.

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Olenegors	k Airfield			
Site No.	4 Olenegorsk Rad (Figure 12).	io Communications	and Radio Rel	ay Station
Airfield : frequency	facility is 1.7 nm runway at 68-09-30N antenna and a tal the top.	033-29-15E. The	facility cont	ains one high
Antenna Number	Туре	Soviet Designator	Frequency (MHz)	Orientation (Degrees)
1	Horizontal Dipole	VGD 30/h d	2.5-6.25	
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Petropavlovsk/Ozero Khalakhtyrka Seaplane Station

Petropavlovsk/Ozero Khalakhtyrka Seaplane Station is in the Far East Military District. Three HF communications facilities can be identified within approximately 5 nm of this seaplane station.

Site No. 1 - Petropavlovsk HF Communications Facility, (Figure 13)

25X1

The facility is 4.6 nm east-northeast of the seaplane station at 53-03-30N 158-51-40E. The facility contains eight high frequency antennas.

Antenna Number	Type	Soviet Designator	$\frac{\text{Frequency}}{\text{(MHz)}}$	Orientation (Degrees)	
1 2 3 4 5 6 7 8	Fishbone (2-2-2) Quadrant Quadrant Fishbone (2-2-2) Fishbone (2-2-2) Quadrant Quadrant Quadrant Quadrant	BS UGD 25/12 d UGD 30/24 d BS BS UGD 12/18 d UGD 20/20 d UGD 12/12 d	Receiving Prob revng Prob revng Receiving Receiving 9.35-15.9 5.62-9.55 9.35-15.9	325 Omnidirectional Omnidirectional 220 Omnidirectional Omnidirectional Omnidirectional	25X1

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Petropavlovsk/Ozero Khalakhtyrka Seaplane Station

Site No. 2 - Petropavlovsk Radio Communications Station East, (Figure 14)

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This facility is 2 nm northeast of the seaplane station at 53-03-05N 158-47-10E. The facility contains four high frequency antennas.

Antenna <u>Number</u>	Type	Soviet Designator	Frequency (MHz)	Orientation (Degrees)	
1 2 3 4	Double Rhombic Double Rhombic Double Rhombic Double Rhombic	RGD 65/4 1 RGD 65/4 1 RGD 65/4 1 RGD 65/4 1	9.0-18.75 7.2-15.00 9.0-18.75 7.2-15.00	70/250	25X1

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Petropavlovsk/Ozero Khalakhtyrka Seaplane Station

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Site No. 3 - Petropavlovsk HF Communications Facility, (Figure 15)

This facility is 5.8 nm northeast of the seaplane station at 53-06-00N 158-52-50E. The facility contains two high frequency antennas and two FORK REST VHF antennas.

Antenna Number	Type	Soviet <u>Designator</u>	Frequency (MHz)	Orientation (Degrees)
1	Horizontal Dipole	VGD 25/h d	3.13-7.82	
2	Horizontal Dipole	VGD 25/h d	3.13-7.82	

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passk-D	alniy Radio Communic	ations Station		. is at Spassk-
acility	irfield 3 nm southwe . Spassk-Dalniy Radi	lo Communications a	and Troposca	tter Station
outh ast Air	, is 4. field. These will b	5 nm south-southwe be described in a s	est of the S subsequent r	spassk-Dalniy eport.
passk-D (Figur	alniy East Airfield e 16)	Radio Communicatio	ons Station,	
	s facility is 1,400	meters south of th	a conton of	the Consul
alniy A:	irfield runway at 44 rant antenna and two	-35-40N 132-53-20E	. The faci	lity contains
itenna	- will will cillick will two	Soviet		
mber_	Type	_ Designator	$rac{ ext{Frequency}}{ ext{(MHz)}}$	Orientation $\underline{\hspace{0.1cm}}$ (Degrees)
1	Shunted Horizontal	VGDsh-2U 8/11 d	6.0-18.7	
2	Dipole Quadrant	UGD 30/23 d	3.51-5.97	170/350 Omnidirectional
3	Shunted Horizontal Dipole	VGDsh=2U 16/23 d	3.0-9.37	
ote: Re	elationship of an ad	ditional mast cann	ot be deter	mined.
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Severomo	orsk Airfield	,			
of this Site No. (Figure This morsk As	Severomorsk Airfield in District. Four HF compairfield are described also less as a severomorsk Radio re 17) Is facility is 3.3 nm no infield runway at 69-04-tigh frequency antennas.	munications faction this report Communications orth-northwest	Station 2,	hin a 5 nm radius	25X
Antenna Number	Type	Soviet Designator	Frequency (MHz)	Orientation (Degrees)	25 X 1
1 2 3	Horizontal Dipole Horizontal Dipole Quadrant (prob rcvng)	VGD 30/30 d VGD 12/20 d UGD 30/20 d	2.5-6.25 9.19-18.0 3.75-6.37	Omnidirectional	23/1
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Severomorsk Airfield

Site No. 2 - <u>Severomorsk Radio Communications Station 1</u>, (Figure 18)

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This facility is 2.7 nm northwest of the center of the Severomorsk Airfield runway at 69-04-05N 033-21-30E. The facility contains seven high frequency antennas and two FORK REST VHF antennas.

Antennas <u>Number</u>	Type	Soviet <u>Designator</u>	Frequency (MHz)	Orientation (Degrees)
1	Horizontal Dipole	VGD 12/25 d	9.19-18.0	
2	Horizontal Dipole	VGD 15/25 d	5.0-12.5	
3	Horizontal Dipole	VGD 12/25 d	9.19-18.0	
4	Horizontal Dipole	VGD 25/25 d	3.13-7.82	
5	Horizontal Dipole	VGD 15/22 d	5.0-12.5	170
6	Horizontal Dipole	VGD 20/h d	3.75-9.38	
7	Single Rhombic	RG 65/4 1	7.2-15.0	

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Severomorsk Airfield

Site No. 3 - Severomorsk Radio Communications and Troposcatter Station SE (Figure 19)

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This facility is 4.8 nm east-southeast of the center of the Severomorsk Airfield runway at 68-59-55N 033-37-50E. The facility contains at least 15 high frequency antennas and two pair of TWIN DISH troposcatter antennas.

Antenna		Soviet	Frequency	Orientation	
Number	<u>Type</u>	Designator	(MHz)	(Degrees)	
1	Single Rhombic	RG 57.2.8 0.6*	8.4-21.0		25 X 1
2	Single Rhombic	RG 57/2.8 0.6*	3.5 - 8.75		20,711
	Single Rhombic	RG 57/2.8 0.6*	8.4-21.0		
3 4	Single Rhombic	RG 57/2.8 0.6*	3.5-8.75		
5	Horizontal Dipole	VGD 30/h d	2.5-6.25		
6	Horizontal Dipole		5.0-12.5		
7	Horizontal Dipole		2.5-6.25		
8	Horizontal Dipole	- /.	2.5-6.25	175/355	
9	Horizontal Dipole		2.5-6.25	,	25X1
10	Horizontal Dipole	VGD 15/h d	5.0-12.5		
11	Probable Shunted				
	Horizontal Dipole	VGDsh-2U 12.5/h d	3.84-12.0	65/245	
		,		1 55/335	
12	Probable Shunted	VGDsh-2U 31/h d	1.54-4.84		25 X 1
3.0	Horizontal Dipol				
13	Fishbone	BS). O 70 F		
14	Single Rhombic	RG 57/2.8 0.6*	4.2-10.7	70/700	
15	Fishbone	BS		10/190	

Note: Antennas 1 & 2, 3 & 4, 5 & 6, and 9 & 10 form day/night pairs. *Based on mensuration, these rhombics do not meet the normal standards.

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TOP SECRET CHESS RUFF



Sanitized Copy Approved for Release 2011/08/24: CIA-RDP78T05162A000200010030-6 25X1 TOP SECRET CHESS RUFF 25X1 Severomorsk Airfield Site No. 4 - Severomorsk HF Communications Facility SW, (Figure 20). 25X1 This facility is 2.5 nm west of the center of the Severomorsk Airfield runway at 69-01-40N 033-18-30E. The facility contains three high frequency antennas. Soviet Frequency Orientation Antennas (\mathtt{MHz}) (Degrees) Number Designator Туре 25X1 2.5-6.25 VGD 30/h d l Horizontal Dipole VGD 30/h d 2.5-6.25 Horizontal Dipole 2 VGD 30/h d 7.19-18.00 3 Horizontal Dipole 25X1 - 26 -25X1 TOP SECRET CHESS PILES 25X1 ├ Sanitized Copy Approved for Release 2011/08/24 : CIA-RDP78T05162A000200010030-6 -

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Ussuriysk/Vozdvizhenka Airfield

Ussuriysk/Vozdvizhenka Airfield is a Long Range Air Army airfield in the Far East Military District. Two HF communications facilities can be identified within 5 nm of this airfield.

Site No. 1 - Vozdvizhenka Radio Communications Station,
(Figure 21).

This facility is 2.9 nm northwest of the center of Ussuriysk/Vozdvizhenka Airfield runway at 43-56-50N 131-53-20E. The facility contains at least seven high frequency antennas.

Antenna Number	<u>Type</u>	Soviet <u>Designator</u>	$\frac{Frequency}{(\mathtt{MHz})}$	Orientation (Degrees)
1 2 3 4 5 6 7	Double Rhombic Double Rhombic Horizontal Dipole Horizontal Dipole Horizontal Dipole Horizontal Dipole Horizontal Dipole	RGD 65/4 1 RGD 65/4 1 VGD 20/26 d VGD 20/26 d VGD 25/26 d VGD 15/26 d	6.0-12.5 6.0-12.5 3.75-9.38 3.75-9.38 3.75-9.38 3.13-7.82 5.0-12.5	130/310

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Site No.	2 - Ussuriysk Radio	Station Vozdvi	zhenka.		25X
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- 2. USSR. Committee of Standards, Measurements, and Instruments, The USSR Council of Ministers, GOST 6497-67, Receiving Shortwave Wideband Balanced Antennas (Counterfeed), Moscow, 1967 (UNCLASSIFIED)
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